Geophysical Research Abstracts
Vol. 13, EGU2011-6509, 2011
EGU General Assembly 2011

Tectonic evolution of the South Atlantic passive continental margin based on onshore structural data.

Daniel Koehn (1), Cees Passchier (2), and Ulrich Glasmacher (3)

(1) Glasgow University, Geographical and Earth Sciences, Glasgow, United Kingdom (daniel.koehn@ges.gla.ac.uk), (2) University of Mainz, Earth Sciences, Mainz, Germany, (3) University of Heidelberg, Earth Sciences, Heidelberg, Germany

This work will deal with the opening of the South Atlantic and the tectonic development of its margins with special emphasis on the Parana LIP's (Large Igneous Province) in Brazil and the Etendeka LIP's in Namibia. We will study the effects of deep-seated mantle processes, far-field plate stresses and local margin dynamics on the passive margin.
Our first hypothesis is that the margins on both sides of the South Atlantic experienced a very different development following LIP extrusion, since hot-spot activities on both margins vary and the Brazilian margin is influenced by the Andean orogeny (being currently under compression in an E-W direction). Our second hypothesis states that the passive continental margin is segmented onshore along the large Florianopolis/Rio Grande Fracture Zone and associated faults and experiences different block movements through time. The second hypothesis is based on new thermochronological data assembled in the first SAMPLE phase, which shows margin segmentation. Our third hypothesis is that reactivation of basement faults plays an important role in the margin dynamics. The Parana and Etendeka LIP'S and their contact to the basement rocks are an ideal archive of the post-rift development of the margin.
Detailed field-work on reactivation of basement faults will be followed by a fault slip analysis in order to determine local paleo-stress states (directions of principal stresses and relative ratios of differential stresses). We aim to produce a new tectonic-thermochronological model of the dynamics of the South Atlantic margins, their differences and segmentation. Our work tackles important SAMPLE questions, will be compared and adjusted to offshore studies and builds an ideal basis for large-scale numerical models.